SBA Enabler Framework

AFWG Update
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Concepts Embraced by SBA (and others)

a) Enterprise-wide electronic interactions and information sharing (info created once, used broadly)

b) Early and continuing collaborative exploration of the largest possible trade space across the life cycle, including time-phased requirements and technology insertion

c) Conceiving, designing, testing and managing to optimize "system of systems" attributes, including interoperability

d) M&S-based assessments early in the development cycle; alternative system designs built, tested and operated in the computer before critical decisions are locked-in and manufacturing begins

e) Reduction of activities more cost-effectively performed in M&S, such as drawings, mock-ups, prototypes and some aspects of live testing

f) Flexible, iterative mixing of simulations and hardware

g) Maximum appropriate reuse of all resources - information, software (including COTS), expertise, facilities, etc. – across phases, programs and organizations

Enablers: The Building Blocks

- **To implement these concepts requires the existence of certain _enablers_**
  - Anything needed to allow one or more of the concepts to be implemented

- **Making these enablers available to program managers is essential for them to establish their particular implementations cost-effectively**

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Ten Classes of Enablers
(per DoD Acquisition Council, 16 Jan 01)

1. **Policy, law and organizational changes** (Concepts a c d f g)

2. **Process changes** (a b c d e f g)

3. **Standards for data interchange** (a b c d e g)

4. **Standards for M&S software application interoperability** (b c d e g)

5. **Authoritative information sources** (a b c d f g)

6. **Capable, reusable models and simulations** (b c d e f g)

7. **Means to manage collaboration & multi-domain optimization** (b c d)

8. **Means to identify, protect & obtain reusable resources** (a b c d e f g)

9. **Business case evidence** (a b c d e f g)

10. **Education, motivation & evolution of work force** (a b c d e f g)

Note: Well-understood and broadly available enablers (e.g., computers, networks, communication protocols) are omitted

Enabler Class Definitions

- **Policy, law and organizational changes** remove structural barriers or provide missing guidance in the areas of management responsibilities, budgeting, contractual matters and business transactions.

- **Process changes** establish or evolve processes (e.g., program planning, solicitation, systems engineering, T&E) to optimize their effectiveness

- **Standards for data interchange** specify the semantics (meaning) and syntax (structure) of exchanged information to reduce the inefficiency and confusion that can arise as information is shared across an enterprise.

- **Standards for M&S software application interoperability** define the technical architecture, including associated APIs, rules and conventions, to allow the effective, coherent exchange of information among software tools (e.g., models, simulations).

Enabler Class Definitions (2 of 3)

- **Authoritative information sources** provide an accurate, credible information base for the enterprise, to be used directly or as raw material for other tasks such as building models, simulations or scenarios.

- **Capable, reusable models and simulations** are required to address acquisition issues (e.g., performance, reliability, cost, supportability) across a system's life cycle. Persistent federations and their support tools (e.g., data collectors) are included here, as is VV&A.

- **Means to manage collaboration and multi-domain optimization** facilitate mastering the complexity inherent in extended enterprises. Includes <u>human interaction</u> means; <u>workflow management</u> methods and tools; methods and tools for <u>deliberation among the various viewpoints and measures of merit</u> provided and means to capture decision rationale.

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Enabler Class Definitions

- **Means to identify, protect and obtain reusable resources** (e.g., info, software, analyses) avoid duplicative development/procurement. Identification means include <u>repositories, bulletin boards and help desks</u>. Protection includes <u>access control and encryption</u> policies and technologies. Obtaining includes <u>request, release and appeal mechanisms</u>.   Also includes effective <u>incentives</u> for resource owners to make them available for reuse.

- **Business case evidence** supports decisions regarding commitments to establish and use advanced acquisition environments. This evidence may be based on factors such as product quality/performance, risk avoidance, time to field, market share, profit, cost savings or cost-avoidance.

- **Education, motivation and evolution of work force** enablers allow the development of the required <u>human skills and behaviors</u>. These include educational source material, education delivery means, financial and non-financial incentives, and human resource management policies.

Some Examples of Enablers

- Policy on responsibilities and liabilities for the reuse of information, software tools and processes
- Collaborative system engineering processes across organizations
- Verification means for electronic delivery and digital signatures
- Authoritative information about friendly systems
- Information interchange standards (semantics and syntax)
- Persistent simulation federations
- Standards for simulation interoperability
- Verification, Validation and Accreditation (VV&A) procedures
- Program management software tools
- Bulletin boards and repositories to find reusable resources
- Protection means for classified or proprietary resources
- Educational materials

Gap Analysis

- Identifying the required enablers to be followed by a gap analysis to determine if they are:
  - In hand
  - In work/emerging
  - Not yet addressed

- Such an assessment should consider the many related activities that may be producing relevant enablers:
  - Government (e.g., U.S. National Institute of Standards and Technology)
  - Defence industry (e.g., EXOSTAR, individual company initiatives)
  - Commercial industry (e.g., COVISINT, individual company initiatives)
  - Academia (e.g., MIT Center for Innovation in Product Development)
  - Consortia (e.g., W3C, RosettaNet, Open Applications Group)
  - Standards organizations (e.g., ISO, IEEE, OMG)

Analysis and Collaboration Process

Initiatives

→ **Review & synthesize**

Shared Concepts

→ **Derive**

Enablers

→ **Survey & assess**

Enabler Status
(in hand, in work, gaps)

Cross-check and iterate

Mission & Resources Filter

Voluntary commitments and status reporting

	Task 1	Task 2	Task 3	....	Task n
Enabler 1	NDIA	OSD	DCAA	NASA	BAE
Enabler 2	ISO	NIST	MoD DND	OMG	DSTO
⋮	USN	DARPA	TTCP	SISO	JSF
Enabler n	Boeing	DERA	DERA NSA	Dassault PTC	DEP

In-hand enabler made visible an available to PM

Enabler WBS with status

Benefits

- **A comprehensive list of the enablers necessary to fully implement the concepts provides**:
  - Understanding of requirements inherent in implementing the concepts - a work breakdown structure
  - Means to cut though the fog of demos and assertions

- **Gap analysis assesses progress, provides**:
  - Insights on implementation feasibility, cost and risk
  - Visibility to encourage broader reuse of viable enablers
  - Situational awareness for allocating resources

- **Voluntary commitments and status reporting yields a collaborative, cost-effective plan of work**
  - Means to establish synergy among the various players

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Peer Review of the Enabler Framework

- Presented and discussed at:
  - SBA ISG, Feb 01
  - Spring SIW, Mar 01
  - SBA Conference, May 01
  - MORS, Jun 01
  - ONR SBD Conference, Jun 01
  - TTCP, Apr 01

- Good feedback, positive endorsement

- Only suggestion on enabler structure: Change #4 to from "M&S software application interoperability" to "software application interoperability"

- Several inputs regarding specific enabler requirements

- TTCP kicking off a complimentary study

TTCP Joint Advanced Acquisition Concepts Study (JAACS)

Purpose:

Assess the feasibility of implementing advanced acquisition concepts proposed by acquisition enhancement initiatives such as System of Systems methodologies, Simulation Based Acquisition, Integrated Digital Environments, Life Cycle Planning, and Evolutionary Acquisition

JAACS Objectives

Provide acquisition managers:

1. An understanding of the key underlying concepts shared by these acquisition enhancement initiatives
2. A comprehensive list of the enablers necessary to implement the concepts
3. An assessment of progress towards realization of those enablers in order to provide insights on implementation feasibility, cost and risk
4. Visibility of viable enablers to encourage their reuse

Provide government, commercial and academic organizations active in this arena:

5. Situational awareness of progress and remaining tasks for allocating resources
6. An organizing framework for an international collaborative plan of work to realize the remaining enablers in the most affordable way

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JAACS Relevance

 "This study will support a key program/project manager (PM) systems engineering task: Determining the acquisition environment (itself a system) in which to define, build and test their defence system. PMs must be aware of the requirements, feasibility, cost and risk of trying to implement various aspects of the acquisition enhancement concepts. This study provides a structure and discipline for international exploration of acquisition enhancement opportunities."

Schedule

1st year: Liaise with acquisition enhancement project leaders and interested organizations; refine key concepts definition; develop initial list of required enablers; begin initial assessment of enabler realization.

2nd year: Develop a baseline list of required enablers; liaise with enabler developers and users; present study to professional societies and invite their review; prepare a joint professional paper on trends in acquisition enhancement.

3rd year: Update definition of required enablers in light of SIAP and FOAS project insights; refine assessment of enabler realization.

4th and 5th years: Update the above in light of continued progress in concept implementation.

JAACS
Effort and Roles

- James Hollenbach (US) will lead document development and configuration management

- National study group members will participate in document development and coordinate as required
  - Canada: Mr. Dave Madeley, National Defence HQ
  - Australia: Rene Van Tol, Director General Materiel Management & Policy Services
  - UK and New Zealand: TBD

- Stephen Cook (AU) will lead development of professional paper
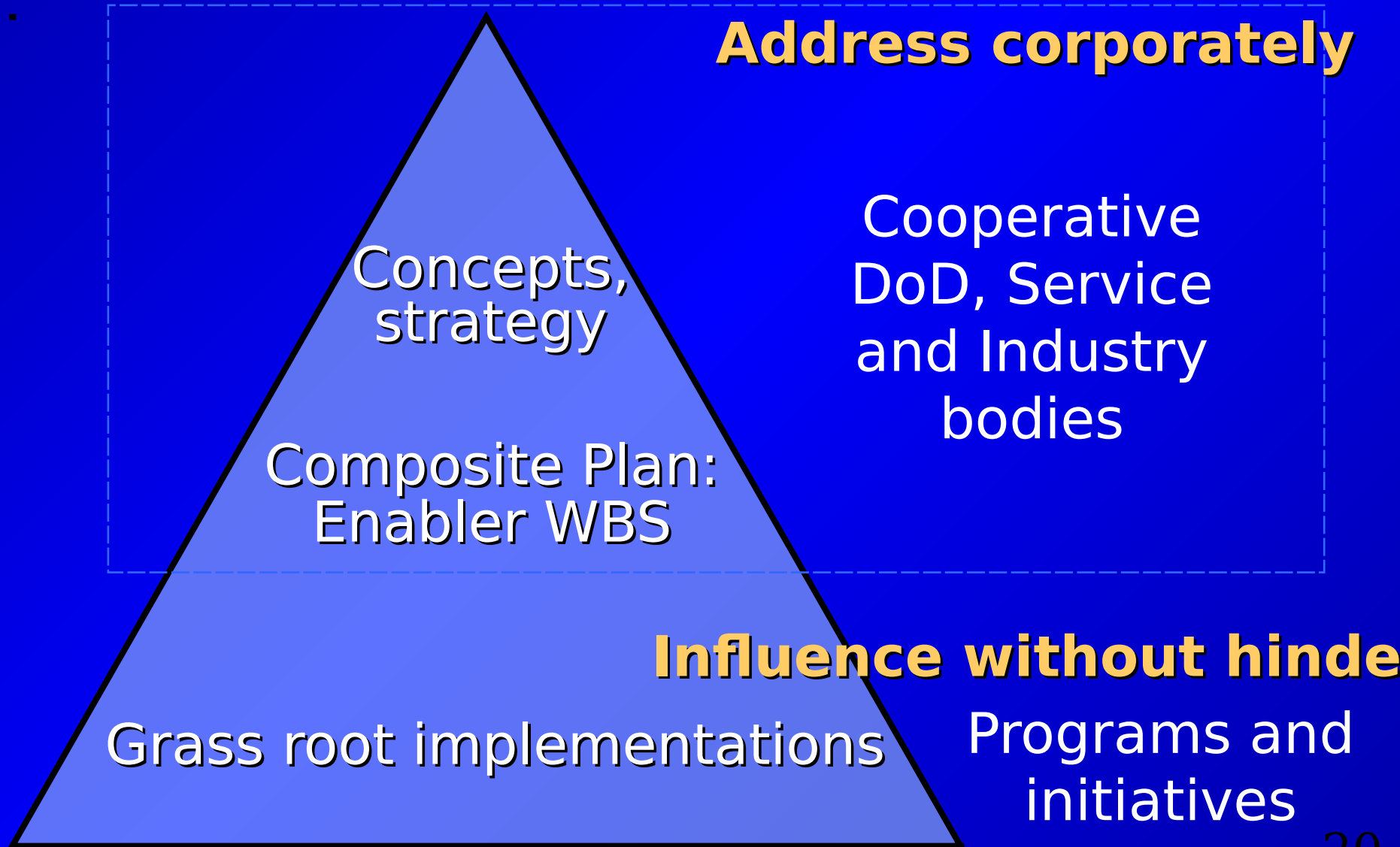
- External interfaces per next slide

JAACS External Interfaces

1. **Acquisition community in each nation.**
   - **Acquisition, Capability Development and Science & Technology leaders**
   - **Systems engineering executives**
   - **Acquisition reform people, IDE, SBA, etc**
   - **Individual Project Managers (reference studies)**

2. **Enabler development community**
   - **Standards organisations**
   - **Policy developers**
   - **Tool developers**
   - **SEI, DMSO, Researchers, Industry**

3. **Professional associations and consortia**
   - **INCOSE**
   - **NDIA**

4. **Acquisition workforce professional development**
   - **Training organisations, e.g., DAU (US), UCL, RMCS (UK), UniSA (AS), Material Management Training Centre (CA)**

5. **Acquisition reformers in other nations**
   - **E.g., Sweden, Israel**

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Some Guiding Principles

- **Stay customer focused**

- **Open process, with all information publicly available**

- **Foster community ownership and cooperation**

- **Clear logic & traceability for each enabler requirement**

- **Change recommendations resolved in a way to foster confidence**

- **Provisions for objective assessments of the maturity and usefulness of individual enablers**

- **Highlight products and activities producing enablers**

- **Don't challenge any current activity**

Management Strategy: Enable, Not Direct

Address corporately

Cooperative DoD, Service and Industry bodies

Concepts, strategy

Composite Plan: Enabler WBS

Influence without hinder

Grass root implementations

Programs and initiatives

Next Steps

- Digest inputs to date (e.g., NIST, Lockheed Martin)
- Further definition of the process for deriving enablers and assessing progress towards their realization
- Update to Acquisition Council, possible revision to enabler classes
- Identification of leads and work groups for each enabler class
- Complimentary international organization via TTCP and possibly INCOSE
- Baseline list of enablers by Jan 02
- Initial assessment by Mar 02

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